

Preliminary Estimates of Protected Species Bycatch Rates in the U.S. Atlantic Pelagic Longline Fishery Between 1 July and 30 September 2006

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Background

The U.S. Atlantic Pelagic Longline fleet operates throughout the Northwestern Atlantic Ocean including along the U.S. coast from the Gulf of Mexico to New England, the waters of the Caribbean, and in international waters of the central North Atlantic Ocean. The longline fishery has a documented history of incidental takes of non-target species including billfish, marine turtles, and marine mammals. During recent years there have been elevated takes of leatherback turtles in the Gulf of Mexico (Garrison, 2003). As a result, a Biological Opinion on the pelagic longline fishery was developed by NOAA Fisheries under the Endangered Species Act, requiring several actions to be taken to improve monitoring and reduce interactions with leatherback and loggerhead turtles. These regulations reopened the Northeast Distant (NED) fishing area, with restrictions, on 30 June 2004, and similar restrictions were imposed on the rest of the fleet effective 5 August 2004. These regulations mandated that all longline gear use 16/0 or 18/0 circle hooks and eliminates J-hooks from the fishery.

The Biological Opinion requires quarterly reporting of interactions with protected species including marine mammals and marine turtles. The goal of this measure is to more closely monitor any potential short-term increases in interaction rates and thereby allow a more responsive management program. This report meets this requirement and includes the fishery effort and incidental takes observed by the pelagic longline observer program (POP) including sets from 1 July 2006 to 30 September 2006.

While it is desirable to directly estimate the absolute level of takes (i.e. the total number of turtles estimated to be taken by the fishery), fishery effort data is reported on logbook forms by fishing captains, and current data are therefore not available until several months after the end of any given quarter. As a result, we present the bycatch rate (i.e. catch per unit effort) based solely on observer data as an indicator of the relative level of interactions with protected species. The observed bycatch rate by fishing area during quarter 3 of 2006 is compared to that observed in quarter 3 of 2005 and to the average of the previous five years (2001-2005) for quarter 3, to assess whether or not the observed rate in 2006 is unusually high or low. Bycatch rates are calculated by applying the

delta log-normal method using hooks as the unit of effort. The analytical methods are described in detail in Garrison (2003).

Results and Discussion

A total of 149 longline sets (~116,298 hooks) were observed during quarter 3 of 2006 (Table 1). The Gulf of Mexico (GOM), the Mid-Atlantic Bight (MAB), and the Northeast Central (NEC) areas had the highest number of observed sets.

There were 10 observed interactions with leatherback turtles, 28 observed interactions with loggerhead turtles, and one observed interaction with Kemp's ridley turtles (Table 2). We are confident that the latter was correctly identified. Nine of the leatherback turtles and 26 of the loggerhead turtles were listed as released alive and injured by the observer (Appendix A). The one Kemp's ridley turtle was listed as released alive and uninjured, and one of the leatherback turtles and two of the loggerhead turtles were listed as released alive with injury unknown. The locations of observed sets and turtle interactions are shown in Figure 1.

Five interactions were observed with pilot whales during this quarter, four of which were in the MAB area, and one in the Northeast Central (NEC) area (Table 3, Figure 2). Three animals were seriously injured based upon observer comments and serious injury criteria (see Garrison, 2003; Angliss and Demaster, 1998). One of these animals was hooked in the mouth, and the other two were not hooked but were released with entangling gear still attached. The two animals considered not seriously injured were entangled in mainlines, and all entangling gear was removed by fishers before release.

The quarterly and regional bycatch rates are summarized for marine turtles in Table 4 and for marine mammals in Table 5. These rates are compared with those from the same quarter/area for 2005 and the average for the third quarter/area from 2001-2005 in Tables 6 and 7 (Fairfield and Garrison, 2006; Garrison, 2005). Specific information on injuries to sea turtles and gear characteristics of each interaction are shown in Appendix A.

For leatherback turtles, the bycatch rates in the NEC and the Northeast Distant (NED) areas for the third quarter of 2006 were higher than those observed during previous years (Table 6A). The 2006 bycatch rates for both areas exceeded the upper bound of the 95% confidence intervals for 2005 (though the NEC was not observed in 2005) and for the period from 2001-2005. Bycatch rates for previous years in the NED included experimental fishing, so these comparisons may not be valid. In the GOM, the 2006 third quarter bycatch rate was elevated from 2005 (when no leatherback turtles were caught) but was lower than the average rate from 2001-2005 (Table 6A). There was no observed bycatch of leatherback turtles in the third quarter of 2006 in the Florida East Coast (FEC), MAB, and the South Atlantic Bight (SAB) areas, where takes had been observed during 2001-2005 (Table 6A).

Loggerhead turtles were caught during the third quarter of 2006 in the MAB, NEC and NED areas. The bycatch rates were elevated in all areas in comparison to 2005 bycatch rates (except in the NEC which was not observed in 2005) and in comparison to the 2001-2005 average rates (Table 6B). The confidence limits for the 2006 estimates are near or exceed the upper bound of the 95% confidence interval for the period from 2001-2005 for all three areas. The bycatch rates for loggerhead turtles were lower than average rates during 2001-2005 for the GOM and SAB areas (Table 6B).

One interaction was observed with a Kemp's ridley turtle in the FEC during the third quarter of 2006. No Kemp's ridley turtles were observed as bycatch in the previous five years (Table 6C). Kemp's ridley turtles have been observed captured on two occasions in the longline fishery in 1994 (MAB fishing area) and 1997 (TUS fishing area).

Bycatch of pilot whales was observed during the third quarter of 2006 in the MAB and NEC areas (Table 7). This bycatch rate is lower than the 2005 bycatch rate in the MAB, but is similar to the average rate for 2001-2005. No pilot whale bycatch had been observed in the NEC during the previous five years, though it has been observed on five occasions in previous years.

Only circle hooks (16/0 and 18/0) were observed during the third quarter of 2006, consistent with regulations for this fishery. Concerted efforts by fishers to remove hooks and disentangle captured turtles are also mandated by the Biological Opinion. Eight of the leatherback turtles were hooked in the armpit, 4 of which were released with the hook removed and no trailing gear, one was released without the hook removed but with no trailing gear, and three were released with the hook and trailing gear (Appendix A1). One of the leatherbacks was hooked in the carapace and was released with the hook and trailing gear, and for one leatherback the observer could not tell if it was hooked but was released with trailing gear. Nine of the ten leatherbacks were not entangled when captured or released, though the observer could not determine if the tenth turtle was entangled.

The loggerheads captured during this third quarter were hooked in the mouth (11 turtles), the tongue (8 turtles), or the external beak (1). Five additional loggerheads swallowed the hook, one loggerhead was hooked in the armpit, and for two additional loggerhead turtles, the observer could not determine if it was hooked (Appendix A2). The hook and trailing gear was removed upon release for all loggerhead turtles hooked in the mouth, the tongue, the external beak, and the armpit, as well as those for which the observer could not determine if it was hooked upon capture. All five loggerhead turtles which swallowed the hook were released with the hook and trailing gear.

The Kemp's ridley turtle was not hooked, but was entangled upon capture, and was released uninjured without any trailing gear (Appendix A3).

There are a number of caveats and uncertainties associated with the current analysis. First, while these data have gone through an initial audit and review, they are subject to change upon further review after the end of the 2006 calendar year. Second, the delta log-normal estimator was applied

to calculate bycatch rates consistent with previous estimates (e.g., Garrison 2003). This approach assumes 1) that catch rates (animals per hook) are lognormally distributed, and 2) that the number of hooks is an appropriate unit of effort. The first assumption has been evaluated for turtles; however, violations of this assumption may result in biased (positive or negative) estimates of catch rate and associated variances. The second assumption has not been examined critically in previous analyses. If this assumption is not correct, for example if there are saturation effects resulting in a non-linear relationship between the number of hooks and total catch, then there is potentially a bias in the estimate of bycatch rates.

The interaction between longline gear and protected species is a relatively rare event and is therefore inherently variable. Historically, there have been very large inter-annual fluctuations in bycatch rates and estimates of total bycatch. Thus, any differences observed between short term observations of bycatch rates and long term averages may be simply stochastic events and are not necessarily indicative of a significant change in the interactions between the longline fishery and protected species.

Literature Cited

Angliss, R.P. and D.P. DeMaster. 1998. Differentiating Serious and Non-Serious Injury of Marine Mammals Taken Incidental to Commercial Fishing Operations: Report of the Serious Injury Workshop 1-2 April 1997, Silver Spring, Maryland. NOAA Technical Memorandum NMFS-OPR-13: 48 p.

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Table 1. Number of sets and hooks observed in the U.S. Atlantic Pelagic Longline Fishery between 1 July – 30 September 2006 by areas. Areas with missing values indicate there was no observer coverage during this time period in this area.

Area	# Sets	# Hooks
CAR	-	-
FEC	16	8,005
GOM	54	38,190
MAB	32	27,330
NCA	-	-
NEC	26	27,591
NED	15	12,267
SAB	6	2,915
SAR	-	-
TUN	-	-
TUS	-	-
Total	149	116,298

Table 2. Total observed interactions with marine turtles in the U.S. Atlantic Pelagic Longline Fishery for sets beginning from 1 July – 30 September 2006 by fishing area. All turtles were recorded as being released alive. Areas with missing values indicate no observer coverage during this time period.

Area	Leatherback Takes Observed	Loggerhead Takes Observed	Kemp's Ridley Takes Observed
CAR	-	-	-
FEC	0	0	1
GOM	1	0	0
MAB	0	3	0
NCA	-	-	-
NEC	4	13	0
NED	5	12	0
SAB	0	0	0
SAR	-	-	-
TUN	-	-	-
TUS	-	-	-
Total	10	28	1

Table 3. Interactions with marine mammals observed during 1 July – 30 September 2006 in the U.S. Atlantic Pelagic Longline Fishery. Observer comments and criteria described in Angliss and DeMaster (1998) were used to evaluate serious injury.

Species	Area	# Released Uninjured	# Dead	# Serious Injury
Pilot Whale	MAB	2	0	2
Pilot Whale	NEC	0	0	1

Table 4. Estimated bycatch rate (catch per 1000 hooks) for (A) Leatherback, (B) Loggerhead, and (C) Kemp's Ridley turtles by area during 1 July – 30 September 2006 in the U.S. Atlantic Pelagic Longline Fishery. Missing values indicate areas with no observer coverage. CV indicates the coefficient of variation of the estimated rate. All turtles were recorded as released alive.

A. Leatherback Turtles

Area	Observed Sets	# Positive Sets	Mean CPUE	Var CPUE	CV
CAR	0	-	-	-	-
FEC	16	0	0	-	-
GOM	54	1	0.0214	0.0005	1
MAB	32	0	0	-	-
NCA	0	-	-	-	-
NEC	26	4	0.1412	0.0044	0.4703
NED	15	3	0.3692	0.0505	0.6087
SAB	6	0	0	-	-
SAR	0	-	-	-	-
TUN	0	-	-	-	-
TUS	0	-	-	-	-

B. Loggerhead Turtles

Area	Observed Sets	# Positive Sets	Mean CPUE	Var CPUE	CV
CAR	0	-	-	-	-
FEC	16	0	0	-	-
GOM	54	0	0	-	-
MAB	32	3	0.1114	0.004	0.5712
NCA	0	-	-	-	-
NEC	26	10	0.4468	0.0145	0.2692
NED	15	3	0.8279	0.3981	0.762
SAB	6	0	0	-	-
SAR	0	-	-	-	-
TUN	0	-	-	-	-
TUS	0	-	-	-	-

Table 4 cont.

C. Kemp's Ridley Turtles

Area	Observed Sets	# Positive Sets	Mean CPUE	Var CPUE	CV
CAR	0	-	-	-	-
FEC	16	1	0.1404	0.0197	1
GOM	54	0	0	-	-
MAB	32	0	0	-	-
NCA	0	-	-	-	-
NEC	26	0	0	-	-
NED	15	0	0	-	-
SAB	6	0	0	-	-
SAR	0	-	-	-	-
TUN	0	-	-	-	-
TUS	0	-	-	-	-

Table 5. Estimated bycatch rate (catch per 1000 hooks) for marine mammals by area during 1 July – 30 September 2006 in the U.S. Atlantic Pelagic Longline Fishery. CV indicates the coefficient of variation of the estimated rate.

Species	Serious Injury	Area	# Positive Sets	# Observed Sets	Mean CPUE	Var CPUE	CV
Pilot Whale	Y	MAB	2	32	0.0854	0.004	0.7408
Pilot Whale	N	MAB	2	32	0.0672	0.0023	0.7075
Pilot Whale	Y	NEC	1	26	0.0404	0.0016	1

Table 6. Bycatch rates for (A) Leatherback turtles and (B) Loggerhead turtles in the U.S. Atlantic longline fishery during 1 July- 30 September, 2006 and comparison to 2005 and the average rate from 2001-2005. 95% CI indicates the estimated 95% confidence interval of the mean bycatch rate (CPUE) in each cell assuming a lognormal distribution of rates.

A. Leatherback turtles

Area	2006 CPUE	2006 95% CI	2005 CPUE	2005 95% CI	2001-2005 CPUE	2001-2005 95% CI
CAR	-	-	-	-	-	-
FEC	0	-	-	-	0.0626	0.0128 - 0.3058
GOM	0.0214	0.0044 – 0.1048	0	-	0.1242	0.0845 - 0.1825
MAB	0	-	0.0310	0.0063 – 0.1516	0.0615	0.0242 - 0.1563
NCA	-	-	-	-	-	-
NEC	0.1412	0.0602 – 0.3309	-	-	0.0182	0.0037 - 0.0891
NED ¹	0.3692	0.1266 – 1.0763	0.1417	0.0438 – 0.4585	0.2194	0.1291 - 0.3729
SAB	0	-	0	-	0.1220	0.0419 - 0.3556
SAR	-	-	-	-	-	-
TUN	-	-	-	-	-	-
TUS	-	-	-	-	-	-

B. Loggerhead Turtles

Area	2006 CPUE	2006 95% CI	2005 CPUE	2005 95% CI	2001-2005 CPUE	2001-2005 95% CI
CAR	-	-	-	-	-	-
FEC	0	-	-	-	0	-
GOM	0	-	0	-	0.0158	0.0064 - 0.0388
MAB	0.1114	0.0405 – 0.3067	0.1026	0.0362 – 0.2910	0.0630	0.0270 - 0.1472
NCA	-	-	-	-	-	-
NEC	0.4468	0.2699 – 0.7397	-	-	0.2490	0.1381 - 0.4492
NED ¹	0.8279	0.2280 – 3.0068	0	-	0.1113	0.0450 - 0.2571
SAB	0	0	0.1201	0.0246 – 0.5872	0.0261	0.0053 - 0.1276
SAR	-	-	-	-	-	-
TUN	-	-	-	-	-	-

TUS	-	-	-	-	-	-
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Table 6 cont.

C. Kemp's Ridley Turtles

Area	2006 CPUE	2006 95% CI	2005 CPUE	2005 95% CI	2001-2005 CPUE	2001-2005 95% CI
CAR	-	-	-	-	-	-
FEC	0.1404	0.0288 – 0.6866	-	-	0	-
GOM	0	-	0	-	0	-
MAB	0	-	0	-	0	-
NCA	-	-	-	-	-	-
NEC	0	-	-	-	0	-
NED ¹	0	-	0	-	0	-
SAB	0	-	0	-	0	-
SAR	-	-	-	-	-	-
TUN	-	-	-	-	-	-
TUS	-	-	-	-	-	-

¹ Fishery effort in the NED region during 2001, 2002, and 2003 (included in this Table) followed an experimental design distinct from “normal” fishery operations.

Table 7. Summary of bycatch rates for marine mammals in the U.S. Atlantic longline fishery during 1 July – 30 September, 2006 and comparison to rates from the previous year (2005) and the average of the previous five years (2001-2005). 95% CI indicates the estimated 95% confidence interval of the mean bycatch rate (CPUE) in each cell assuming a lognormal distribution of rates. CPUEs reflect total marine mammals caught including alive, dead, and seriously injured animals.

Species	Area	2006 CPUE	2006 95% CI	2005 CPUE	2005 95% CI	2001-2005 CPUE	2001-2005 95% CI
Common Dolphin	MAB	0	-	0	-	0.0105	0.0022 - 0.0514
Common Dolphin	NED ¹	0	-	0	-	0.0146	0.0030 - 0.0716
Risso's Dolphin	MAB	0	-	0	-	0.0082	0.0017 - 0.0401
Risso's Dolphin	NEC	0	-	0	-	0.0454	0.0136 - 0.1516
Risso's Dolphin	SAB	0	-	0	-	0.0416	0.0085 - 0.2036
Pilot Whale	MAB	0.1527	0.0558 – 0.4177	0.3987	0.1633 - 0.9734	0.1916	0.0987 - 0.3717
Pilot Whale	NEC	0.0404	0.0083 – 0.1975	0	-	0	-
Unid. Marine Mammal	GOM	0	-	0.0248	0.0051 - 0.1212	0.0041	0.0008 - 0.0199

¹ Fishery effort in the NED region during 2001, 2002, and 2003 followed an experimental design distinct from “normal” fishery operations.

Figure 1. Observed U.S. Pelagic Longline Fishery effort and marine turtle interactions during 1 July – 30 September 2006. The pelagic longline fishing areas in the North Atlantic Ocean are as follows: CAR = Caribbean, GOM = Gulf of Mexico, FEC = Florida East Coast, SAB = South Atlantic Bight, SAR = Sargasso Sea, MAB = Mid-Atlantic Bight, NEC = Northeast Coastal, NED = Northeast Distant, NCA = North Central Atlantic, TUN = Tuna North and TUS = Tuna South. Closed fishing areas and the U.S. Exclusive Economic Zone (EEZ) are shown.

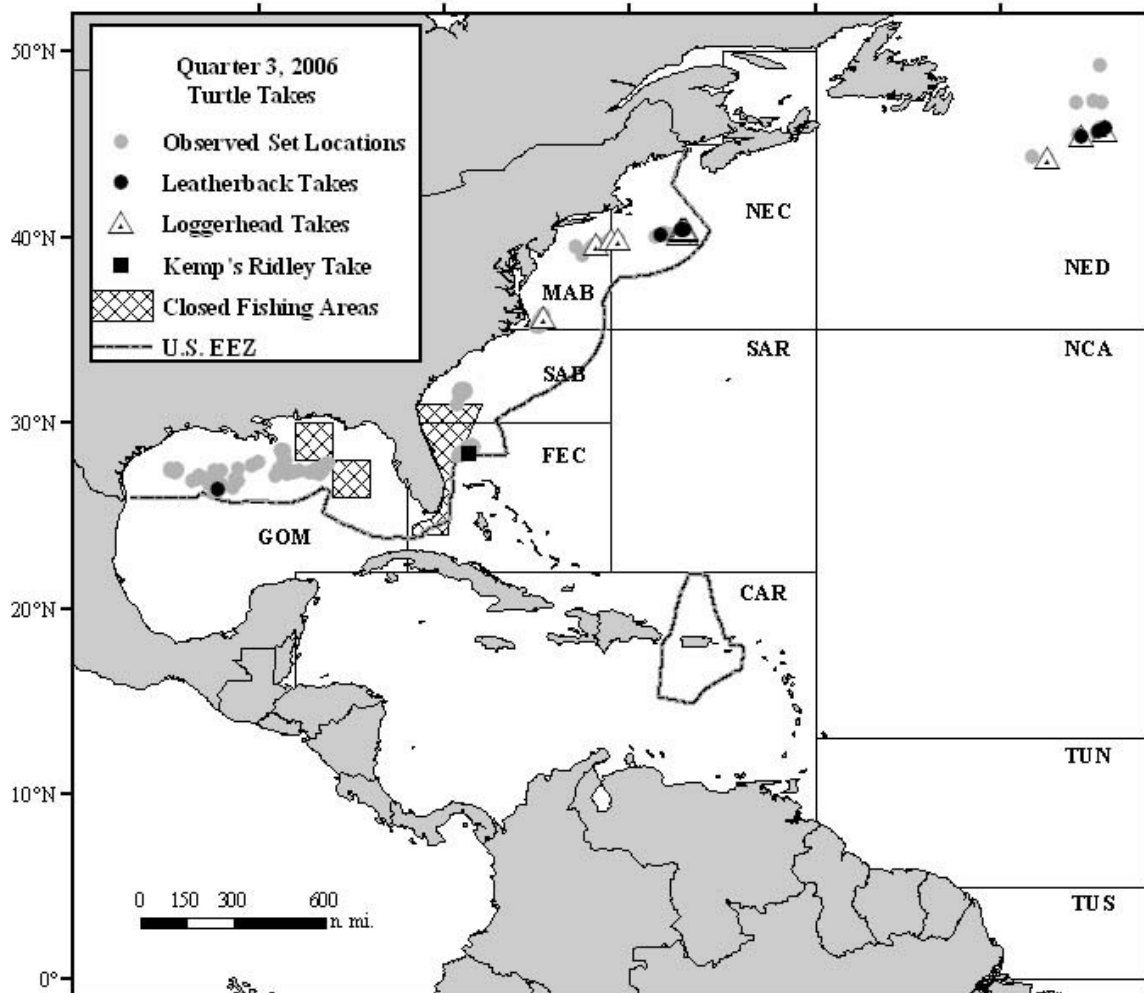
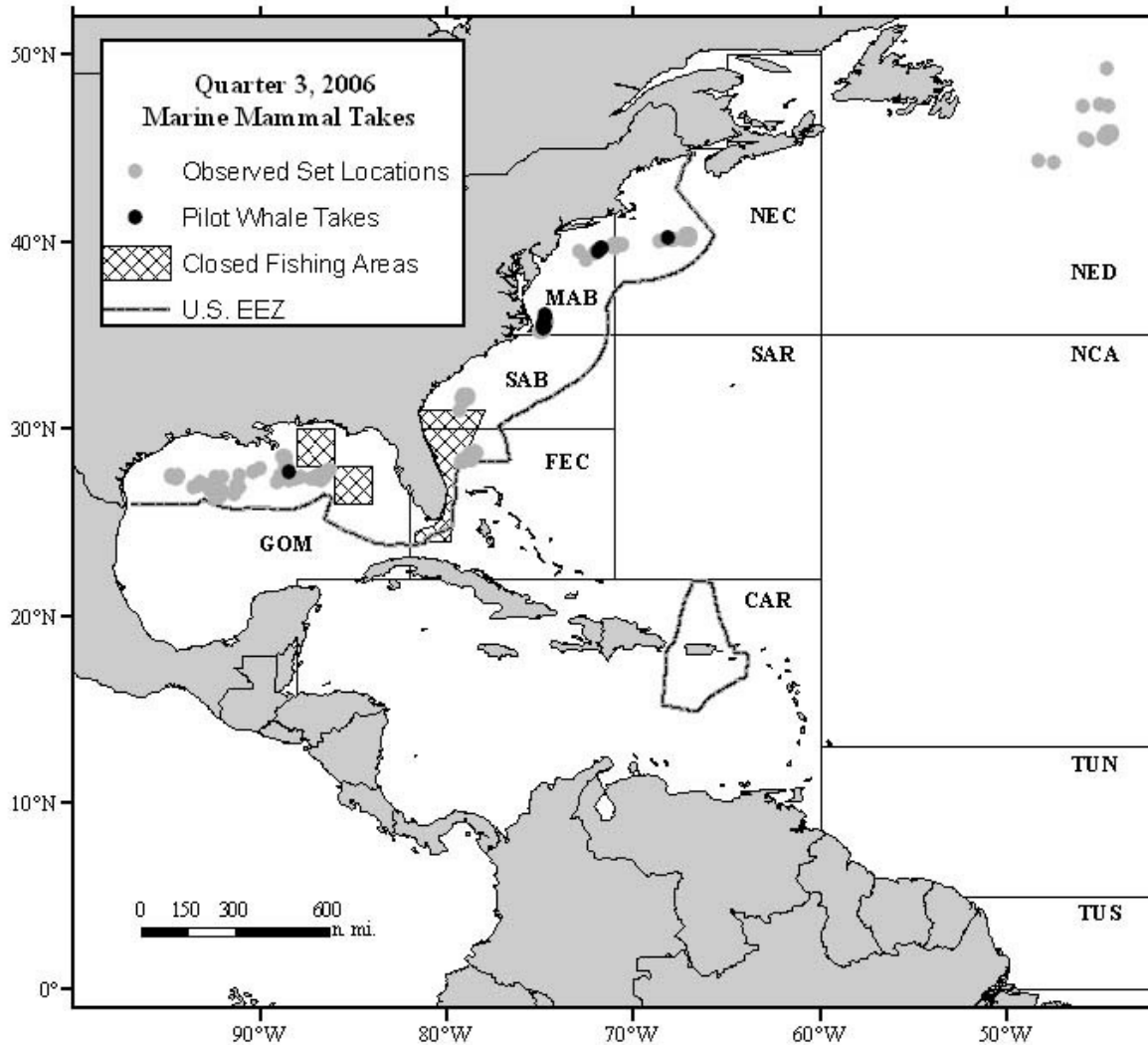


Figure 2. Observed U.S. Pelagic Longline Fishery effort and marine mammal interactions during 1 July – 30 September 2006. The pelagic longline fishing areas in the North Atlantic Ocean are as follows: CAR = Caribbean, GOM = Gulf of Mexico, FEC = Florida East Coast, SAB = South Atlantic Bight, SAR = Sargasso Sea, MAB = Mid-Atlantic Bight, NEC = Northeast Coastal, NED = Northeast Distant, NCA = North Central Atlantic, TUN = Tuna North, and TUS = Tuna South. Closed fishing areas and the U.S. Exclusive Economic Zone (EEZ) are shown.



Appendix A: Injury details and hook types for turtles captured in the U.S. Atlantic Pelagic Longline Fishery for sets during 1 July – 30 September 2006.

1. Leatherback Turtles

#	Area	Hook Type	Offset (°)	Bait	Bait Size (g)	Release Condition	Hook Location	Jaw Location	Hook Visible?	Hook Removed?	Entangled Capture?	Entangled Release?	Line Left (ft)	CL Est. (ft)	CCL (cm)	Straight N-N (cm)
1	GOM	C-16/0	0	squid	112.5	Alive, injured	armpit	na	na	No	No	No	0.00	3.00		
2	NEC	C-18/0	10	squid or mackerel	173 or 255	Alive, injured	carapace	na	na	No	No	No	4.00	4.50		
3	NEC	C-18/0	10	squid or mackerel	186 or 284	Alive, injured	armpit	na	na	No	No	No	0.10	4.50		
4	NEC	C-18/0	10	squid or mackerel	165 or 250	Alive, injured	armpit	na	na	Yes	No	No	0.00	4.50		
5	NEC	C-18/0	10	squid or mackerel	281 or 390	Alive, injured	armpit	na	na	Yes	No	No	0.00	4.50		
6	NED	C-18/0	10	mackerel	363	Alive, injured	armpit	na	na	Yes	No	No	0.00	6.00		
7	NED	C-18/0	10	mackerel	363	Alive, injured	armpit	na	na	No	No	No	0.10	6.00		
8	NED	C-18/0	10	mackerel	363	Alive, injured	armpit	na	na	Yes	No	No	0.00	5.00		
9	NED	C-18/0	10	mackerel	363	Alive, injured	armpit	na	na	No	No	No	0.10	5.50		
10	NED	C-18/0	10	squid or mackerel	144 or 363	Alive, injury unknown	not known if hooked			No	Unknown	Unknown	21.00			

2. Loggerhead Turtles

#	Area	Hook Type	Offset (degrees)	Bait	Bait Size (g)	Release Condition	Hook Location	Jaw Location	Hook Visible?	Hook Removed?	Entangled Capture?	Entangled Release?	Line Left (ft)	CL Est. (ft)	CCL (cm)	Straight N-N (cm)
1	MAB	C-18/0	10	squid or mackerel	157 or 327	Alive, injured	swallowed	na	not visible	No	No	No	0.50		62	55.5
2	MAB	C-16/0	0	squid	192	Alive, injured	tongue	na	na	Yes	No	No	0.00		72	
3	MAB	C-16/0	0	squid	150-200	Alive, injured	swallowed	na	partial hook	No	No	No	0.10		75	66.4
4	NEC	C-18/0	10	squid or mackerel	173 or 255	Alive, injured	beak external	na	na	Yes	No	No	0.00		69	67.8
5	NEC	C-18/0	10	squid or mackerel	173 or 255	Alive, injured	tongue	na	na	Yes	No	No	0.00		70.2	64.2
6	NEC	C-18/0	10	squid or mackerel	170 or 256	Alive, injured	tongue	na	na	Yes	No	No	0.00		71	63.3
7	NEC	C-18/0	10	squid	170	Alive, injured	tongue	na	na	Yes	No	No	0.00		76.8	69
8	NEC	C-18/0	10	squid or mackerel	173 or 255	Alive, injured	tongue	na	na	Yes	No	No	0.00		72.6	66.7
9	NEC	C-18/0	10	squid or mackerel	173 or 255	Alive, injured	swallowed	na	not visible	No	No	No	0.50		75	68.8
10	NEC	C-18/0	10	squid or mackerel	168 or 262	Alive, injured	tongue	na	na	Yes	No	No	0.00		62.8	56.2
11	NEC	C-18/0	10	squid	168	Alive, injured	mouth	side other	na	Yes	No	No	0.00		73.2	64.3
12	NEC	C-16/0	0	squid	200	Alive, injured	mouth	lower other	na	Yes	No	No	0.00			69
13	NEC	C-18/0	10	squid or mackerel	281 or 390	Alive, injured	tongue	na	na	Yes	No	No	0.00		78.9	70.9
14	NEC	C-18/0	10	squid or mackerel	281 or 390	Alive, injured	tongue	na	na	Yes	No	No	0.00		64.1	56.9
15	NEC	C-18/0	10	squid	282	Alive, injured	armpit	na	na	Yes	No	No	0.00		76.5	68.2
16	NEC	C-16/0	0	squid	281	Alive, injury	not known if hooked			Yes	No	No	0.00	2.30		

						unknown										
17	NED	C-18/0	10	mackerel	363	Alive, injured	mouth	side jaw joint	na	Yes	No	No	0.00		62.5	55
18	NED	C-18/0	10	squid or mackerel	145 or 363	Alive, injured	swallowed	na	not visible	No	No	No	0.20		65	58.8
19	NED	C-18/0	10	squid or mackerel	144 or 363	Alive, injured	mouth	lower other	na	Yes	No	No	0.00		58	51.5
20	NED	C-18/0	10	squid or mackerel	144 or 363	Alive, injury unknown	not known if hooked			Yes	unknown	No	0.00	2.00		
21	NED	C-18/0	10	squid or mackerel	144 or 363	Alive, injured	mouth	lower other	na	Yes	No	No	0.00		55.4	50.2
22	NED	C-18/0	10	squid or mackerel	144 or 363	Alive, injured	swallowed	na	not visible	No	No	No	0.20		61.5	55.7
23	NED	C-18/0	10	squid or mackerel	144 or 363	Alive, injured	mouth	lower other	na	Yes	No	No	0.00		62	55.9
24	NED	C-18/0	10	squid or mackerel	144 or 363	Alive, injured	mouth	lower other	na	Yes	No	No	0.00		45.8	40.5
25	NED	C-18/0	10	squid or mackerel	144 or 363	Alive, injured	mouth	lower other	na	Yes	No	No	0.00		65.2	57.2
26	NED	C-18/0	10	squid or mackerel	144 or 363	Alive, injured	mouth	lower other	na	Yes	No	No	0.00		60.1	54.2
27	NED	C-18/0	10	squid or mackerel	144 or 363	Alive, injured	mouth	side jaw joint	na	Yes	No	No	0.00		45.1	39.2
28	NED	C-18/0	10	squid or mackerel	144 or 363	Alive, injured	mouth	lower other	na	Yes	No	No	0.00		64.1	57.4

3. Kemp's Ridley Turtles

#	Area	Hook Type	Offset (degrees)	Bait	Bait Size (g)	Release Condition	Hook Location	Jaw Location	Hook Visible?	Hook Removed?	Entangled Capture?	Entangled Release?	Line Left (ft)	CL Est. (ft)	CCL (cm)	Straight N-N (cm)
1	FEC	C-16/0	0	squid	128	Alive, uninjured	not hooked	na	na	na	Yes	No	0.00	1.20		